

REMARKS

Claims 1-11, 13-15 and 18-20 are currently pending in the present application. Claims 1, 9, 10 and 11 have been amended. Claims 16 and 17 have been cancelled. Support for the claim amendments may be found, at least, at page 25 of the present specification. Applicants submit that no new matter has been entered by way of the amendments.

The Advantages of the Present Invention

The claimed polymer emulsion contains a natural or synthetic cationic polymer, (A) or (A'), and a specified vinyl polymer (B), prepared by a specified process. The monomer for the polymer (B) is specified in claims 1 and 9.

The claimed invention provides an unexpected improvement in view of the stiffness of the obtained pulp sheet and bulk. The inventive paper quality improver has very strong affinity for pulp, significantly increases the amount of agent fixed, improves the efficiency due to spreading on the wet surface of pulp after fixation or during drying and heating, and improves the fixation of the agent/pulp interface, as shown in the specification at pages 4 and 5.

The obtained pulp sheet results in greatly improved stiffness and bulk. The obtained paper has a superior quality to that of the prior art.

Rejection Under 35 U.S.C. §102/§103

Claims 1-4, 6-11, 13-16 and 18-20 stand rejected under 35 U.S.C. §102(a or e)/35 U.S.C. §103(a) as being anticipated by, or in the alternative, obvious over **Chen et al. (US 2002/0066540) ("Chen '540")**. Applicants respectfully traverse.

Present claims 1 and 9 have been amended to incorporate the limitations of claim 17. Claim 17 was not subject to the outstanding rejection. “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Hence, Applicants submit that Chen does not teach each and every limitation of the presently claimed invention and withdrawal of the outstanding rejection is requested.

Rejections Under 35 U.S.C. §103

Claim 5 stands rejected under 35 U.S.C. §103(a) as being obvious over **Chen ‘540** in view of **Wurzburg (“Modified Starches: Properties and Uses” CRC Press, Inc. Boca Raton, FL, 1986, pp 116-117) (“Wurzburg”)**.

Claim 17 stands rejected under 35 U.S.C. §103(a) as being obvious over **Chen ‘540** in view of **DeWacker et al (USP 4,940,741) (“DeWacker ‘741”)**.¹

Applicants traverse each of the above rejections.

Legal Standard for Determining Prima Facie Obviousness

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

¹ The present claim amendments incorporate the limitations of claim 17 into independent claim 1. Claim 17 has been cancelled. The outstanding rejection was not made further in view of the rejection of claim 1 in the 35 U.S.C. §102(a or e)/35 U.S.C. §103(a) over Chen ‘540. However, the discussion of the combination of Chen ‘540 in view of DeWacker ‘741 herein addresses the cited prior art to the extent that it may apply to amended claim 1 and/or claim 9.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

“There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art.” *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper.). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).

“In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification.” *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. “The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art.” *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the

importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Chen '540 in view of Wurzburg

The Examiner correctly recognizes that Chen '540 does not teach the nitrogen content of the natural cationic polymer. The Examiner turns to Wurzburg to demonstrate that it would have been obvious to use the claimed nitrogen content, as Wurzburg teaches a nitrogen content of 0.38 weight percent.

However, Wurzburg provides no teaching or suggestion as to why one of ordinary skill in the art would employ the claimed nitrogen content.

When the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper. *Ex parte Skinner*, 2 USPQ2d 1788 (Bd. Pat. App. & Inter. 1986)(emphasis added). Moreover, a statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993)(emphasis in original).

Here, the Examiner has not provided any explanation as to why one of ordinary skill in the art would elect to use the cationizing method disclosed in Wurzburg. The Examiner has not pointed to any perceived advantage or any scientific rationale for using the particular cationizing

starches other than the fact that they are known in the art. As such, Applicants submit that the outstanding rejection is improper and respectfully request reconsideration and withdrawal of the outstanding rejection.

Chen '540 in view of DeWacker '741

Chen '540 fails to show polymerization of (B) in the presence of (A) or (A'). Applicants submit that it is not obvious to combine Chen '540 with DeWacker '741.

Chen '540 shows, [0035], that monomers for the polymer necessarily contain 1 wt. % of an ionic monomer. DeWacker '741, on the other hand, shows only vinyl acetate, (column 7, lines 1-5), which is a non-ionic monomer. For this reason, it is not obvious to combine Chen '540 with DeWacker '741.

Furthermore, Chen '540 [0028] shows a polymerization of monomers in which the continuous phase is oil. DeWacker '741, on the other hand, shows that continuous phase is aqueous (column 7, line 3). For this reason, it is not obvious to combine Chen '540 with DeWacker '741.

Chen '540 [0048]-[0050], shows that a cationized starch or a synthetic cationic polymer works as a coagulant before polymer particles are added to a cellulose dispersion. Moreover, Chen '540 [0038] shows only a surfactant as a stabilizer to polymerization. DeWacker '741, on the other hand, shows in the Abstract, that starch works as a stabilizer to polymerization. For this reason, it is not obvious to combine Chen '540 with DeWacker '741.

Chen '540 [0048] shows that the polymer is added to a cellulose slurry (pulp slurry). DeWacker '741, on the other hand, shows (column 8, lines 12-21) that paper, wet or dried, is coated by spraying or rolling. For this reason, it is not obvious to combine Chen '540 with DeWacker '741.

If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Additionally, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

Applicants have pointed out several incompatible features of Chen '540 and DeWacker '741 that make the suggested combination infeasible. Moreover, the incompatible features render the combination unsatisfactory for arriving at the presently claimed invention. As such, Applicants submit that the rejection is improper and respectfully request withdrawal of the outstanding rejection.

Additional Matters Regarding Chen '540

Chen '540 [0043] shows species of a surfactant having an HLB of about 8 to about 11. In the present application, a surfactant may be used as another stabilizer than (A) and (A'). It is preferable that the surfactant has an HLB of about 16. Emulgen 150, used in examples, has an HLB of 18.3.

If (A') has too large a viscosity value, a cationic polymer is difficult to handle and an emulsion is difficult to be concentrated to have a large solid content. This is discussed in the present application at page 10, lines 10-13. Moreover, (A') is dispersed in water and then a monomer for (B) is added. If (A') has too large a viscosity value, a monomer for (B) is difficult to be dispersed there. That will cause limitations to amounts of (A') and (B). If (A') has too low a viscosity, it will have a low stabilization for (B) and an obtained pulp sheet has a low stiffness and a low bulk.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey, Reg. No. 32,881 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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By

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